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Long Survival in Dissecting Aneurysm of Ascending Aorta

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New and aggressive medical (Wheat *et al.*, 1965) and surgical (DeBakey *et al.*, 1965) techniques to treat dissecting aneurysm of the aorta have been introduced recently. This has spurred interest in the prognosis of this disease (Kuipers and Schatz, 1963; Lindsay and Hurst, 1967; McCloy, Spittell, and McGoon, 1965), since decisions about the introduction of any new therapy obviously will depend upon an adequate understanding of natural history. The concept of a rapidly fatal outcome in virtually all cases has been modified, for there is clear evidence that some patients have long survival (Rineberg, Forline, and Orgain, 1960). Nevertheless, Lindsay and Hurst have suggested that patients with dissecting aneurysms may be divided into groups with differing prognosis and therapy. They claim that involvement of the ascending aorta imparts a grave prognosis, for of their 40 patients with dissection of ascending aorta, 38 died during the first three weeks, and the remaining 2 lived no more than "several months" after diagnosis. They feel that ". . . the disorder is likely to be fatal within a few days", and ". . . heroic life saving measures are justified". The implication is that one has nothing to lose in attempting aortic surgery in these cases. Since some experience is contrary to this, it seemed worth while to describe two patients with proved dissection of the ascending aorta who survived 74 and 26 months, respectively, after diagnosis.

Report of Cases†

Case 1. A 53-year-old motor repairman was admitted to Henry Ford Hospital on November 16, 1961, because of sudden onset of paraplegia while at work. This had been preceded briefly by dizziness and anterior chest pain. Pertinent findings on cardiovascular examination included blood pressures of 140/90 mm. Hg in the right arm and 164/96 mm. Hg in the left arm, and a harsh bruit over the left subclavian artery in the supraclavicular space. All major peripheral pulses were full and equal. An electrocardiogram revealed ST segment elevations in leads I, II, III, aVF, and in praecordial leads V2–6. A chest *x*-ray while the patient was supine showed a prominent aortic knob with superimposed vascular shadow above it. Diagnosis of dissecting aneurysm of the aorta with consequent spinal cord infarction was made, and symptomatic therapy was instituted.

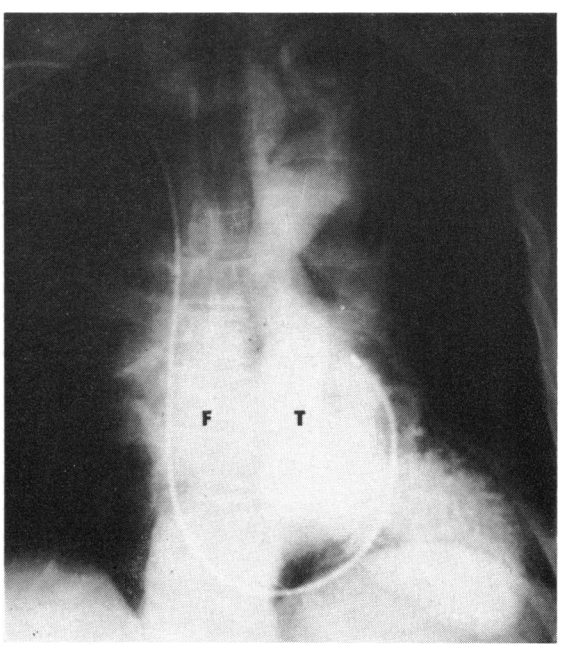

FIG. 1.—Aortogram in Case 1 which confirms the presence of dissecting aneurysm of the ascending aorta. There is deformity and displacement to the left of the true channel (T). The false channel (F), which is faintly opacified, lies to the right and is larger than the true channel.

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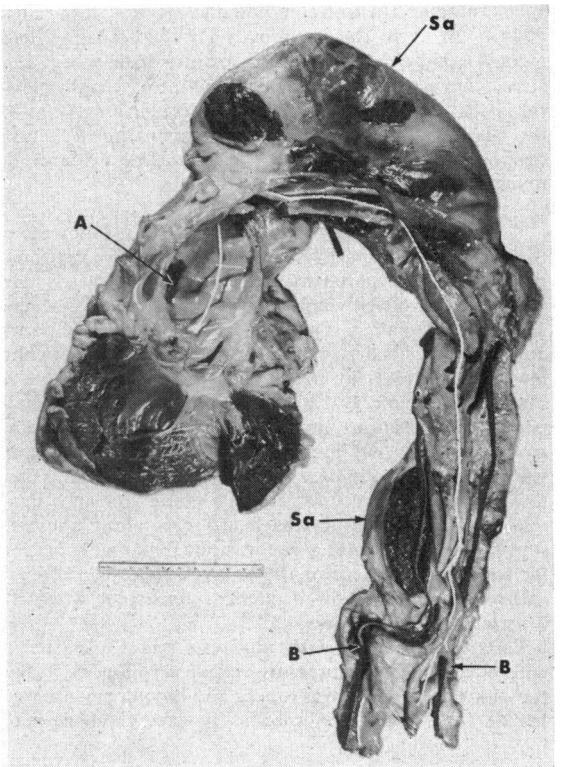
† Case 1 was included in a series of cases reported previously (Kuipers and Schatz, 1963).

The following day a grade 1/6 early blowing diastolic murmur was heard down the left sternal border together with a grade 2/6 harsh ejection murmur at the base of the heart. An electrocardiogram now showed further ST segment elevations; these were considered compatible with dissecting aneurysm producing haemopericardium and/or myocardial ischaemia. On November 24, a thoracic aortogram was accomplished by the introduction of contrast material into the right ventricle. (Fig. 1.) This confirmed the diagnosis of dissecting aneurysm of the ascending aorta. Because of the extent and location of this lesion, surgical therapy was considered excessively hazardous. On November 28, 1961, a loud pericardial friction rub was audible. The patient's condition improved and he was discharged on February 25, 1962.

His care was closely supervised in the out-patient division; methyldopa, chlorothiazide and potassium supplement therapy were given. He was able to walk with the aid of a leg brace and was continent. Serial chest *x*-rays confirmed gradual enlargement of the thoracic aortic aneurysm, which remained asymptomatic. On November 24, 1965, a repeat thoracic aortogram with pulmonary artery injection of contrast media disclosed a large dissecting aneurysm involving the ascending aorta, transverse arch, and descending aorta with faint opacification of the second channel. Fluoroscopy of the chest on December 6, 1967, showed minimal progress enlargement of the aneurysm compared to films taken previously. On January 1, 1968, he died suddenly at home. Necropsy confirmed a dissecting aneurysm involving the entire aorta; intimal tears were present in the ascending aorta, 1·5 cm. distal to the



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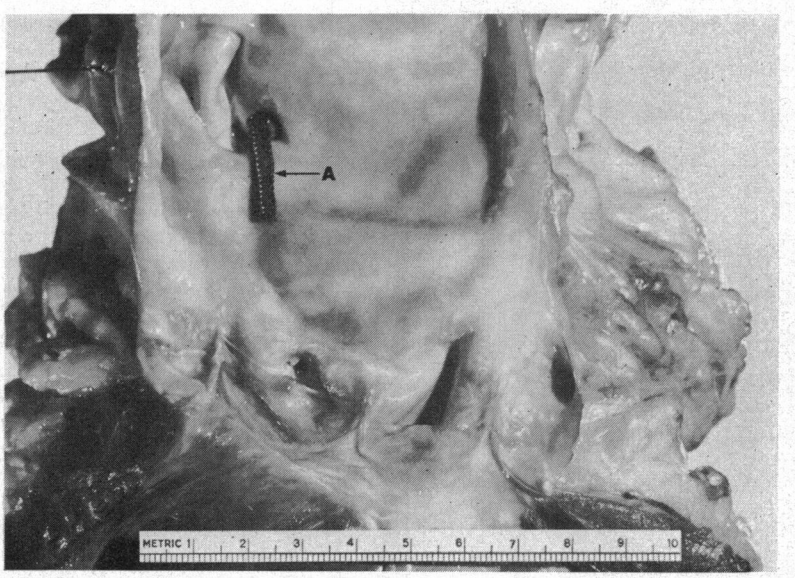

B

FIG. 2.—Aorta removed at necropsy in Case 1. (A) The dissection involves the entire aorta from entry point A to re-entry points B in both common iliac arteries. The white string marks the true channel. Two saccular aneurysms (Sa) of the false channel are present. The dark string marks the false channel. (B) Intimal tear in the ascending aorta is marked by dark string (A).

aortic valve, and in both common iliac arteries, approximately 2 cm. from their origins. The false channel had formed a large saccular aneurysm just distal to the left subclavian artery; this had ruptured into the right pleural space. A similar but smaller saccular aneurysm of the false channel was present just proximal to the bifurcation of the aorta (Fig. 2). There was no evidence of myocardial infarction.

Case 2. A 62-year-old banker had been followed in the cardiovascular division since 1960 for chronic ischaemic and hypertensive cardiovascular disease. He was admitted on November 22, 1962, because of severe anterior chest pain. This had been present for 24 hours and was described as being sharp and radiating to the low back. Pertinent findings on examination were a blood pressure of 240/120 mm. Hg in both arms, normal peripheral pulsations, and a heaving apex felt 12·5 cm. from the midsternal line. A grade 2/6 ejection murmur was heard across the base of the heart with transmission towards the right carotid artery; a grade 2/6 early diastolic blowing murmur was heard best along the left sternal border. Chest *x*-ray was not remarkable except for some enlargement of the left ventricle. A 12 lead electrocardiogram showed changes consistent with left ventricular hypertrophy.

Parenteral therapy with rauwolfia was administered with adequate blood pressure response. The next day the diastolic murmur was louder and blood pressure was 160/68 mm. Hg. Non-specific T wave changes were present on the electrocardiogram and were consistent with myocardial ischaemia.

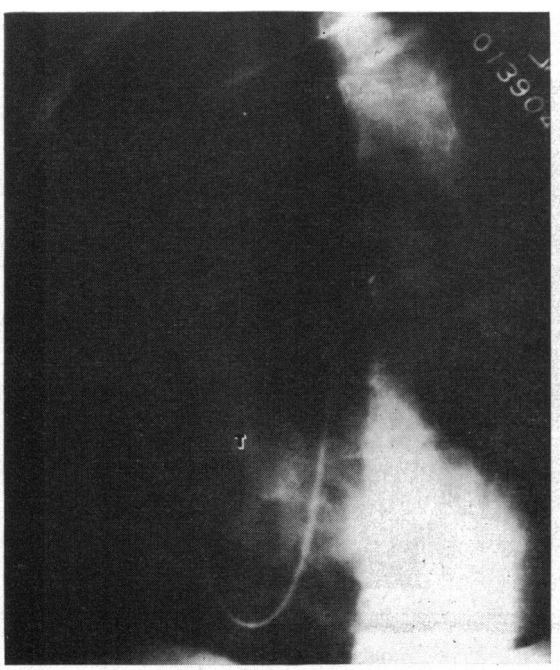

FIG. 3.—Aortogram in Case 2. There is narrowing of the true channel (T) with sparing of the root of the aorta. The false channel did not opacify.

Over the next several days pain subsided and blood pressure was controlled with parenteral rauwolfia. The diagnosis of dissecting aneurysm was considered likely and a thoracic aortogram was performed on December 4, 1962, with injection of contrast media into the pulmonary artery. This confirmed the presence of aneurysmal dilatation of the entire thoracic aorta (Fig. 3).

Because of the extent of the lesion, non-surgical therapy was instituted; this consisted of antihypertensive medication. The patient was discharged on January 5, 1963, and was followed closely in the outpatient division. No further symptoms of dissection appeared, but the patient did suffer from angina pectoris. On August 14, 1963, a subendocardial infarction occurred; convalescence in hospital was uneventful. Chest fluoroscopy performed on September 3, 1963, disclosed further aneurysmal dilatation of the thoracic aorta. In the descending portion, two parallel calcific walls were present; this was considered diagnostic of dissecting aneurysm.

In November 1964, the left sternal border diastolic murmur was louder. The patient continued to have frequent episodes of exertional angina; in view of this symptom, together with a history of myocardial infarction, it was felt that surgical intervention, which had again been considered, would impose an unacceptable risk.

On January 13, 1965, the patient died at home. Necropsy permission was not granted.

DISCUSSION

The treatment of patients with dissection of the aorta poses a therapeutic problem for the physician. On the one hand, there are reports of successful aortic surgery in some cases, yet the thoughtful practitioner is aware that such spectacular results occur in only a few surgical centres and that critical analysis of the over-all surgical experience would reflect very high risk (Wheat *et al.*, 1965; DeBakey *et al.*, 1965). On the other hand, the image of dissecting aneurysm has been that of a rapidly fatal catastrophe, though long survival in some cases has been documented. The difficulty has been in deciding if and when a particular patient should be operated upon. In an attempt to provide guidance, Lindsay and Hurst, and others (Hirst, Johns, and Kime, 1958; Shennan, 1934; Burchell, 1955), have claimed that prognosis could be related directly to the site of the intimal tear: the more distal the rupture from the aortic root, the better the chances of survival. In a study of patients with dissecting aneurysm reported in 1963 from this institution, this impression was not confirmed; of 20 patients in whom intimal rupture occurred in the ascending aorta, 9 lived more than 6 weeks and 7 more than 1 year (Kuipers and Schatz, 1963).

The 2 cases described here underline the implication derived from these data; the arbitrary consignment of patients to groups with predetermined prognosis and therapy may not always be warranted. The decision to recommend or withhold operation will depend on many variables; the cornerstone of such judgements will be the careful assessment of individual cases. Unfortunately, those clinical factors that favour the development of chronic dissection and long survival in patients with involvement of the ascending aorta are not known. It may be reasonable to hope, however, that the prompt administration of antihypertensive medication in appropriate cases, together with symptomatic therapy, will result in long-term survival of some patients with this catastrophic illness.

Summary

Dissecting aneurysm involving the ascending aorta was observed in two men who survived 74 and 26 months, respectively, after diagnosis. Non-surgical therapy was instituted in both of them. Confirmation of diagnosis was obtained by angiography. These cases indicate that long survival is possible in patients with dissecting aneurysm involving the ascending aorta, and that arbitrary rules concerning the institution of specific forms of therapy related to site of dissection may not always be justified.

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